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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,026	12/02/2003	Andrew J. Ouderkirk	59417US002	4456
32692	7590	07/31/2006	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY			QUARTERMAN, KEVIN J	
PO BOX 33427			ART UNIT	PAPER NUMBER
ST. PAUL, MN 55133-3427			2879	

DATE MAILED: 07/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/727,026

Applicant(s)

OUDERKIRK ET AL.

Examiner

Kevin Quarterman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 34-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                                           |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                                          | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                      | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0606</u> . | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment and remarks received 08 May 2006 have been entered and overcome the claim objections recited in the previous office action mailed 07 February 2006.

### ***Terminal Disclaimer***

2. The terminal disclaimer filed on 08 May 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/727,072 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Drawings***

3. The replacement-drawings were received on 08 May 2006. These drawings are acceptable.

### ***Claim Objections***

4. Claim 16 is objected to because of the following informalities: It appears that claim 16 should be dependent upon claim 15, instead of independent claim 1, since "dots" were first recited in claim 15. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 4-6, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller (US 6,155,699).

7. Regarding independent claim 1, Figure 2 of Miller shows a light source (26) comprising an LED (12) that emits excitation light; a layer of phosphor material (36) to receive the excitation light, the phosphor material emitting visible light when illuminated with the excitation light; and a first non-planar flexible multilayer reflector (30) being positioned to reflect LED light onto the phosphor material.

8. Regarding claim 4, Miller discloses the excitation light comprising UV light (col. 5, ln. 21-24).

9. Regarding claim 5, Figure 2 of Miller shows the first non-planar flexible multilayer reflector (30) being a concave flexible multilayer reflector.

10. Regarding claim 6, Figure 2 of Miller shows the first non-planar flexible multilayer reflector (30) being a hemispherical concave flexible multilayer reflector.

11. Regarding claim 14, Figure 2 of Miller shows the phosphor material (36) being a discontinuous layer of phosphor material.

12. Claims 1, 4-7, and 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by McNulty (US 6,686,676).

13. Regarding independent claim 1, Figure 5 of McNulty shows a light source (10) comprising an LED (20) that emits excitation light; a layer of phosphor material (26)

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positioned to receive the excitation light, the phosphor material emitting visible light when illuminated with the excitation light (col. 4, ln. 40-44); a first non-planar flexible multilayer reflector (70) that reflects the excitation light and transmits visible light, the non-planar flexible multilayer reflector being positioned to reflect LED light onto the phosphor material.

14. Regarding claim 4, McNulty discloses the excitation light comprising UV light (col. 4, ln. 41).

15. Regarding claim 5, Figure 5 of McNulty shows the non-planar flexible multilayer reflector as a concave flexible multilayer reflector.

16. Regarding claim 6, Figure 5 of McNulty shows the non-planar flexible multilayer reflector as a hemispherical concave flexible multilayer reflector.

17. Regarding claim 7, Figure 5 of McNulty shows the layer of phosphor material disposed between the LED and the non-planar flexible multilayer reflector.

18. Regarding claim 14, Figure 5 of McNulty shows the layer of phosphor material being a discontinuous layer of phosphor material.

19. Regarding claim 15, Figure 5 of McNulty shows the layer of phosphor material being a plurality of dots of phosphor material.

20. Regarding claim 16, McNulty discloses each dot having an area of less than 10000 microns<sup>2</sup> (col. 5, 39-41).

21. Regarding claim 17, McNulty discloses the plurality of dots comprising phosphor material that emit red, green, and blue light when illuminated with excitation light (col. 4, ln. 11-16).

***Claim Rejections - 35 USC § 103***

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

24. Claims 2-3 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US 6,155,699) in view of Benson (US 5,831,375).

25. Regarding claim 2, Miller teaches the limitations of independent claim 1 discussed earlier but fails to exemplify the first non-planar flexible multilayer reflector comprising polymeric material.

26. Benson teaches that it is known in the art to provide the light sources with multilayer reflectors comprising polymeric material (col. 6, ln. 33-51) for reflecting and/or polarizing light emitted by the lamp (Abstract).

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27. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the light source of Miller with a non-planar flexible multilayer reflector comprising polymeric material, as taught by Benson, for reflecting light onto the phosphor material.

28. Regarding claim 3, Benson discloses the multilayer reflector comprising alternating layers (Fig. 1b) of a first and second thermoplastic polymer and wherein at least some of the layers are birefringent (col. 6, ln. 33-53).

29. Regarding claim 12, Benson discloses a polymeric material that resists degradation when exposed to UV light (col. 6, ln. 54-65).

30. Regarding claim 13, Benson discloses a multilayer reflector that is substantially free of inorganic materials (col. 6, ln. 54-65).

31. Claims 18 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US 6,155,699) in view of Vriens (US 5,813,753).

32. Regarding claim 18, Miller discloses the limitations of independent claim 1 discussed earlier but fails to exemplify a second multilayer reflector disposed between the LED and the phosphor material.

33. Vriens teaches, in Figure 3, that it is known in the art to provide a light source with a phosphor material (34) disposed between a first multilayer reflector (37) and the LED (31) and a second multilayer reflector (Fig. 4) disposed between the LED (41) and the phosphor material (44) for improving the overall intensity of the device (col. 6, ln. 55-58).

34. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the light source of Miller with a second multilayer reflector, as taught by Vriens, for reflecting visible light and transmitting excitation light.

35. Regarding claim 29, Figure 3 of Vriens shows the layer of phosphor material as a discontinuous layer of phosphor material.

36. Claims 19-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US 6,155,699) and Vriens (US 5,813,753) as applied to claim 18 above, and further in view of Benson (US 5,831,375).

37. Regarding claim 19, Miller and Vriens teach the limitations of independent claim 1 discussed earlier but fail to exemplify the second non-planar flexible multilayer reflector comprising polymeric material.

38. Benson teaches that it is known in the art to provide the light sources with multilayer reflectors comprising polymeric material (col. 6, ln. 33-51) for reflecting and/or polarizing light emitted by the lamp (Abstract).

39. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the light source of Miller with a second multilayer reflector comprising polymeric material, as taught by Benson, for reflecting light onto the phosphor material.

40. Regarding claim 20, Benson discloses the multilayer reflector comprising alternating layers (Fig. 1b) of a first and second thermoplastic polymer and wherein at least some of the layers are birefringent (col. 6, ln. 33-53).



41. Regarding claim 21, Figure 2 of Miller shows the first non-planar flexible multilayer reflector (30) being a concave flexible multilayer reflector.
42. Regarding claim 22, Figure 2 of Miller shows the multilayer reflector being a concave multilayer reflector.
43. Regarding claim 23, Figure 2 of Miller shows the first non-planar flexible multilayer reflector (30) being a hemispherical concave flexible multilayer reflector.
44. Regarding claim 24, Figure 2 of Miller shows the multilayer reflector (30) being a hemispherical concave multilayer reflector.
45. Regarding claim 25, Benson discloses a polymeric material that resists degradation when exposed to UV light (col. 6, ln. 54-65).
46. Regarding claim 26, Benson discloses a multilayer reflector that is substantially free of inorganic materials (col. 6, ln. 54-65).
47. Regarding claim 27, Benson discloses multilayer reflectors comprising polymeric material, while Miller shows in Figure 2 a hemispherical multilayer reflector (30).
48. Regarding claim 28, Vriens discloses the layer of phosphor material being disposed between the first multilayer reflector and the second multilayer reflector (col. 6, ln. 55-58).
49. Claims 18 and 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNulty (US 6,686,676) in view of Vriens (US 5,813,753).
50. Regarding claim 18, McNulty discloses the limitations of independent claim 1 discussed earlier but fails to exemplify a second multilayer reflector disposed between the LED and the phosphor material.

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51. Vriens teaches, in Figure 3, that it is known in the art to provide a light source with a phosphor material (34) disposed between a first multilayer reflector (37) and the LED (31) and a second multilayer reflector (Fig. 4) disposed between the LED (41) and the phosphor material (44) for improving the overall intensity of the device (col. 6, ln. 55-58).

52. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the light source of McNulty with a second multilayer reflector, as taught by Vriens, for reflecting visible light and transmitting excitation light.

53. Regarding claim 29, Figure 5 of McNulty shows the layer of phosphor material being a discontinuous layer of phosphor material.

54. Regarding claim 30, Figure 5 of McNulty shows the layer of phosphor material being a plurality of dots of phosphor material.

55. Regarding claim 31, McNulty discloses each dot having an area of less than 10000 microns<sup>2</sup> (col. 5, 39-41).

56. Regarding claim 32, McNulty discloses the plurality of dots comprising phosphor material that emit red, green, and blue light when illuminated with excitation light (col. 4, ln. 11-16).

57. Regarding claim 33, Figure 5 of McNulty shows a first phosphor dot (26) that emits light at a first wavelength and a second phosphor dot (28) that emits light at a second wavelength different from the first wavelength.

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***Response to Arguments***

58. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

***Contact Information***

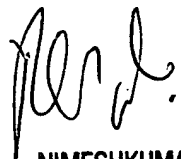
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (571) 272-2461. The examiner can normally be reached on M-TH (7-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Quarterman  
Examiner  
Art Unit 2879

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23 July 2006

  
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